The Federation of Earth Science Information Partners

PUTTING EARTH SCIENCE TO WORK

The Federation of Earth Science Information Partners (ESIP) brings together scientists and students, engineers and farmers, government agencies and businesses. By engaging the full range of stakeholders, we hope to increase benefits from data just becoming available from the powerful new generation of Earth observing satellites. By combining efforts, we accelerate the pace of Earth science and improve our understanding of Earth systems. By including groups that reach beyond the science communities, we assure that the best of science results find effective use throughout society.

Understanding our physical surroundings has always been the key to human survival. This becomes particularly important as our expanding population and technical capabilities make increasing demands upon the resources of the planet. The new generation of Earth observing satellites promises better data than ever before; however, with improved data comes a new appreciation of the complexity of Earth systems. Adaptive, resilient, and necessarily distributed approaches must be developed to understand these data and apply them effectively in response to changing environmental demands. New coordination is required among historically disparate groups.

WHY HAVE A FEDERATION?

...Because the whole is much greater than the sum of the parts. Tapping the terabytes of data from Earth orbiting satellites, in situ devices, and computer models, Federation partners work together to apply scientific findings to real-world problems. Members of the Federation share their varied data sets making a richer data pool to apply for environmental purposes. "Clusters" of partners assemble critical complements of know-how to new problems. "Clusters" unite data providers, university research centers, businesses, not-for-profit, and even end users, e.g., farmers, fisherman, and students.

Founded and sponsored by NASA, the Federation is now expanding to include other sponsors of Earth science information products and services. The Federation's goal is to increase the quality and usage of Earth science data and to create interoperability tools for Earth data resources.

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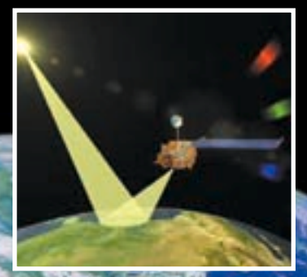
THE FEDERATION OF EARTH SCIENCE INFORMATION PARTNERS



Why the ESIP Federation Thinks Globally...

Images and information from Earth orbiting satellites have demonstrated in compelling ways that our planet is finite with only a thin shell to support the life we know. Today, we are affecting this life-support system to an extent that might prove irreparable. The Federation of Earth Science Information Partners (ESIP) was created to insure broader space-based imagery use. Space-based imagery and related Earth Science data are powerful tools for:

- Scientists who can better understand basic biological, geophysical, and chemical cycles of the Earth's system;
- Business people who create value in the imagery and support further missions;
- Teachers who use data and information to enhance education;
- Professors who are educating our future scientists;
- Civil servants who need to assess and plan for sustainable resources;
- The public whose lives are affected daily by environmental change; and
- Environmental decision makers, including regulators, legislators, attorneys, and land-use planners.

...BUT ACTS LOCALLY

Earth Science and remotely sensed imagery allow us to look at our environment locally as well as at a distance. With satellite imagery and related information we can see the details of our cities, fields and forests in ways our eyes alone cannot. By distributing data and information we can interpret the complexity of our environment and use that knowledge to our benefit.

NASA's *Terra* and other Earth observing satellites have sophisticated sensors to record Earth radiation patterns, surface land and sea temperatures, vegetation and cultivation patterns, biomass, water distribution, ocean color, ocean winds and currents, plus air pollution. The Federation makes available these data for science and community empowerment.

THE ESIP FEDERATION'S VISION

Following the Federation's initiation by NASA in 1998, came this vision statement "...envision a time when society's quality of life, economic opportunities, and stewardship of the planet are enhanced by regular use of scientifically accurate Earth science information provided in a timely manner by the Federation of groups collaborating to improve their collective services."

The ESIP Federation's Strength is in the Partnership

Each partner has many years of experience with satellite imagery, geospatial data, and scientific analysis. Partners are encouraged to form "clusters" for the exchange of information and knowledge. A cluster may form combinations from four types of partners. These are:

I. Data processing and archiving centers from NASA and other agencies;

II. Earth science centers focused on research by Earth scientists to learn about global systems;

III. Groups and businesses serving communities beyond Earth science. This type of partner may range from non-profit educational organizations to new e-businesses offering information through the Internet; and

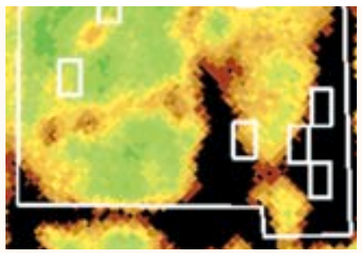
IV. Sponsors, including government and private foundations that invest in the Federation to solve immediate and long-range data and information problems.

These four types of partners link to create:

- Science-based products and services;
- Interoperable archives with common data structures and processing capabilities;
- An economic environment for research and commerce; and
- Increased diversity of users and uses of Earth science.

The members leverage each other's capabilities by forming virtual knowledge centers to address specific topics (e.g., hydrology, deforestation, and climate issues). The knowledge centers share expertise and laboratory facilities, making the whole greater than the sum of the parts. In addition, their collective efforts provide high quality satellite and Earth science data products and services to user groups that might otherwise not use these types of data. In so doing, the Federation has widened the information highway to include satellite imagery. This growing Earth data "information economy" opens up new research and commercial opportunities for advancing our knowledge.

Landsat TM image, San Francisco Bay Area



GIS Study Areas, Napa Valley

Innovation Global Local

One of the primary challenges of the Federation is to create interoperability tools for Earth data and information, so that the end-user no longer has to puzzle through a maze of data and cataloging issues. Through the use of space-based imagery and related Earth science data:

- Emergency management authorities are better able to make critical decisions, e.g. evacuation measures;
- Ship captains can safely route their course around storms;
- Public Health Officials can update their advisories on fire ant flight conditions daily; and
- Wine grape growers can manage their fields for improved product quality and consistency.

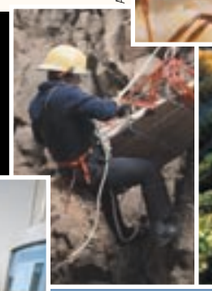
THE ESIP FEDERATION'S COMMITMENT

Simply removing current difficulties in these data delivery pathways or announcing the availability of these data is not enough to generate an Earth science information economy. The Federation is committed to each phase in the creation and use of Earth science knowledge. We process and archive the space images from Earth orbiting satellites. We then provide these data to scientists to derive valuable information. And finally we deliver the quality scientific results to the business person, the teacher, the farmer, the civil servant; to help them as they make critical decisions to protect our environment.

Texas Fire Ant Project

Agricultural Research Service, USDA

Find Out More About the Federation at
www.esipfed.org



The Federation of Earth Science Information Partners is actively seeking user communities of all types.